Chemical Analysis Report

SO-DIST-2016-02-24-01

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **SMP: Highlands Lakes**
Request ID: **RQ-2016-02-15-65**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901
Attn: Ben Paswater

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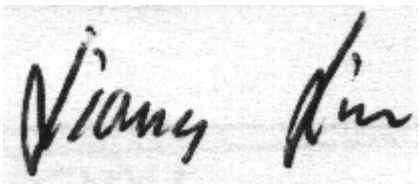
Certified by: Liang Lin, Environmental Administrator

Date Certified: 11-MAR-2016 17:33



Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical group are included in this report: Nutrients.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

A - Value reported is the mean of two or more determinations.
B - Results based on colony counts outside the acceptable range.
I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
J - Estimated value and/or the analysis did not meet established quality control criteria.
K - Actual value is known to be less than value given.
L - Actual value is known to be greater than value given.
N - Presumptive evidence of presence of material.
O - Sampled, but analysis lost or not performed.
Q - Sample held beyond normal holding time.
T - Value reported is less than the criterion of detection.
U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
V - Analyte was detected in both sample and method blank.
X - Too few individuals to calculate SCI value.
Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: LAKE PYTHIAS WBID 1758G **Collection Date/Time: 02/23/2016 10:30**

Field ID: LAKE PYTHIAS @ MIDDLE Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1774314	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P299189	
	EPA 300.0 Rev. 2.1	Chloride	20		mg Cl/L	P299554	
		Sulfate	31		mg SO4/L	P299559	
	SM 2120 B	Color (true)	13		PCU	P299211	
	SM 2320 B-97	Total Alkalinity	2.4	I	mg CaCO3/L	P299823	
	SM 2540 C-97	TDS	90		mg/L	P299759	
	SM 2540 D-97	TSS	4	I	mg/L	P299682	
	SM 4500 F-C-97	Fluoride	0.11		mg F/L	P299391	
1774319	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P299981	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.47		mg N/L	P299575	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.18		mg N/L	P299502	
	EPA 365.1 Rev. 2.0	Total-P	0.021		mg P/L	P299569	
	SM 5310 B-00	Organic Carbon	4.9		mg C/L	P299436	
1774324	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P299179	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.
SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 160 umhos/cm.
SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.
EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.
SM 5310 B-00: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: LAKE PYTHIAS WBID 1758G **Collection Date/Time: 02/23/2016 10:50**

Field ID: LAKE PYTHIAS @ NORTH SIDE Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1774315	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P299189	
	EPA 300.0 Rev. 2.1	Chloride	20	A	mg Cl/L	P299554	
		Sulfate	31	A	mg SO4/L	P299559	
	SM 2120 B	Color (true)	11		PCU	P299211	
	SM 2320 B-97	Total Alkalinity	2.1	I	mg CaCO3/L	P299387	RPD
	SM 2540 C-97	TDS	81		mg/L	P299759	
	SM 2540 D-97	TSS	2	I	mg/L	P299682	
	SM 4500 F-C-97	Fluoride	0.11		mg F/L	P299767	
1774320	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P299981	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.47		mg N/L	P299575	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.19		mg N/L	P299703	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P299569	
	SM 5310 B-00	Organic Carbon	4.9		mg C/L	P299436	
1774325	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P299179	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.
SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 161 umhos/cm.
SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.
EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.
SM 5310 B-00: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: LAKE PYTHIAS WBID 1758G **Collection Date/Time: 02/23/2016 11:05**

Field ID: LAKE PYTHIAS @ WEST SIDE Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1774316	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P299189	
	EPA 300.0 Rev. 2.1	Chloride	20		mg Cl/L	P299554	
		Sulfate	31		mg SO4/L	P299559	
	SM 2120 B	Color (true)	13		PCU	P299211	
	SM 2320 B-97	Total Alkalinity	2.2	I	mg CaCO3/L	P299387	RPD
	SM 2540 C-97	TDS	89		mg/L	P299759	
	SM 2540 D-97	TSS	4	I	mg/L	P299682	
	SM 4500 F-C-97	Fluoride	0.11		mg F/L	P299767	
1774321	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P299981	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.52		mg N/L	P299575	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.17		mg N/L	P299703	
	EPA 365.1 Rev. 2.0	Total-P	0.023		mg P/L	P299569	
	SM 5310 B-00	Organic Carbon	4.9		mg C/L	P299436	
1774326	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P299179	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.
SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 161 umhos/cm.
SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.
EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.
SM 5310 B-00: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: LAKE PYTHIAS WBID 1758G **Collection Date/Time: 02/23/2016 11:15**

Field ID: LAKE PYTHIAS @ SOUTH SIDE Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1774317	EPA 180.1 Rev. 2.0	Turbidity	2.6		NTU	P299189	
	EPA 300.0 Rev. 2.1	Chloride	20		mg Cl/L	P299554	
		Sulfate	32		mg SO4/L	P299559	
	SM 2120 B	Color (true)	13		PCU	P299211	
	SM 2320 B-97	Total Alkalinity	2.1	I	mg CaCO3/L	P299387	RPD
	SM 2540 C-97	TDS	81		mg/L	P299759	
	SM 2540 D-97	TSS	2	I	mg/L	P299682	
	SM 4500 F-C-97	Fluoride	0.11		mg F/L	P299767	
1774322	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P299981	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.49		mg N/L	P299575	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.19		mg N/L	P299703	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P299570	
	SM 5310 B-00	Organic Carbon	4.8		mg C/L	P299436	
1774327	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P299179	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.
SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 161 umhos/cm.
SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.
EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.
SM 5310 B-00: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: LAKE PYTHIAS WBID 1758G **Collection Date/Time: 02/23/2016 10:40**

Field ID: LAKE PYTHIAS @ EAST SIDE Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1774318	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P299189	
	EPA 300.0 Rev. 2.1	Chloride	20		mg Cl/L	P299554	
		Sulfate	31		mg SO4/L	P299559	
	SM 2120 B	Color (true)	12		PCU	P299211	
	SM 2320 B-97	Total Alkalinity	2.1	I	mg CaCO3/L	P299387	RPD
	SM 2540 C-97	TDS	86		mg/L	P299759	
	SM 2540 D-97	TSS	4	I	mg/L	P299682	
	SM 4500 F-C-97	Fluoride	0.11		mg F/L	P299767	
1774323	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P299981	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.44		mg N/L	P299575	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.20		mg N/L	P299703	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P299570	
	SM 5310 B-00	Organic Carbon	4.9		mg C/L	P299436	
1774328	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P299179	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.
SM 2540 C-97: The reported result is consistent with the laboratory conductivity, 161 umhos/cm.
SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.
EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.
SM 5310 B-00: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P299189

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299554

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299559

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299981

Component	Result	Code	Units
Ammonia-N	0.002	U	mg N/L

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299575

Component	Result	Code	Units

Quality Assurance Report
Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299575

Component	Result	Code	Units
Kjeldahl Nitrogen	0.080	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299502

Component	Result	Code	Units
NO2NO3-N	0.004	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299703

Component	Result	Code	Units
NO2NO3-N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299569

Component	Result	Code	Units
Total-P	0.002	U	mg P/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299570

Component	Result	Code	Units
Total-P	0.002	U	mg P/L

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299179

Component	Result	Code	Units
O-Phosphate-P	0.004	U	mg P/L

Reference Method: SM 2120 B
Batch ID: P299211

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P299387

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO3/L

Reference Method: SM 2320 B-97
Batch ID: P299823

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO3/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 2540 C-97
Batch ID: P299759

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P299682

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P299391

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P299767

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P299436

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299554

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299559

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	99.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299981

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.4		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299575

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299575

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.5		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299502

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	102		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299703

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	102		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299569

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	105		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299570

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	104		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299179

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	103		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P299387

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	105		P	95 - 105

Reference Method: SM 2320 B-97
Batch ID: P299823

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P299391

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.8		P	94 - 108

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P299767

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.3		P	94 - 108

Reference Method: SM 5310 B-00
Batch ID: P299436

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	91.4		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299554

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1774314	Chloride	103		P	90 - 110
1774315	Chloride	103		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299981

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1774321	Ammonia-N	98.0	98.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299502

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1774228	NO2NO3-N	99.1	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299703

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1774419	NO2NO3-N	103	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299569

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1774228	Total-P	99.3	98.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299570

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1774322	Total-P	99.3	96.8	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299179

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1774324	O-Phosphate-P	102	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P299391

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1774012	Fluoride	96.0	96.7	P/P	94 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P299767

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1774755	Fluoride	95.8	97.2	P/P	94 - 107

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P299189

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1774288	Turbidity	1.77	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299554

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1774315	Chloride	0.141	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P299559

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1774315	Sulfate	1.74	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299981

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1774321	Ammonia-N	0.468	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P299575

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1774244	Kjeldahl Nitrogen	0.574	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299502

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1774228	NO2NO3-N	0.870	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P299703

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1774419	NO2NO3-N	0.487	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299569

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1774228	Total-P	0.489	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P299570

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1774322	Total-P	2.42	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P299179

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1774324	O-Phosphate-P	1.27	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P299211

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1774289	Color (true)	2.87	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P299387

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1771612	Total Alkalinity	5.00	Sample	F	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P299823

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1774467	Total Alkalinity	0.401	Sample	P	0 - 4.8

Quality Assurance Report
Precision

Reference Method: SM 2540 C-97
Batch ID: P299759

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1774226	TDS	4.48	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P299391

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1774012	Fluoride	0.473	Spike	P	0 - 3.7

Reference Method: SM 4500 F-C-97
Batch ID: P299767

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1774755	Fluoride	0.999	Spike	P	0 - 3.7

Reference Method: SM 5310 B-00
Batch ID: P299436

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1774244	Organic Carbon	0.519	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A67800
Included Lab Sample IDs: 1774324, 1774325, 1774326, 1774327, 1774328

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.2	99.0	P/P	90 - 110
O-Phosphate-P	99.5	99.4	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A67802
Included Lab Sample IDs: 1774314, 1774315, 1774316, 1774317, 1774318

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	100	P/P	95 - 105

Reference Method: SM 2120 B
Run ID: A67818
Included Lab Sample IDs: 1774314, 1774315, 1774316, 1774317, 1774318

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.0	96.3	P/P	85 - 115

Quality Assurance Report
Calibration Verification

Reference Method: SM 2320 B-97
Run ID: A67871
Included Lab Sample IDs: 1774315, 1774316, 1774317, 1774318

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	104	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A67872
Included Lab Sample IDs: 1774314

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	99.0	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A67885
Included Lab Sample IDs: 1774319, 1774320, 1774321, 1774322, 1774323

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	93.8	94.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A67914
Included Lab Sample IDs: 1774319

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A67933
Included Lab Sample IDs: 1774314, 1774315, 1774316, 1774317, 1774318

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	98.8	P/P	90 - 110
Chloride	98.8	101	P/P	90 - 110
Chloride	99.3	100	P/P	90 - 110
Sulfate	101	97.8	P/P	90 - 110
Sulfate	95.7	98.3	P/P	90 - 110
Sulfate	97.8	95.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A67984
Included Lab Sample IDs: 1774320, 1774321, 1774322, 1774323

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A68003
Included Lab Sample IDs: 1774319, 1774320, 1774321, 1774322, 1774323

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	102	P/P	90 - 110
Total-P	102	102	P/P	90 - 110
Total-P	102	102	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 4500 F-C-97
Run ID: A68004
Included Lab Sample IDs: 1774315, 1774316, 1774317, 1774318

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.5	98.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A68013
Included Lab Sample IDs: 1774319, 1774320, 1774321, 1774322, 1774323

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	99.6	P/P	90 - 110
Kjeldahl Nitrogen	105	104	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A68022
Included Lab Sample IDs: 1774314

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.5	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A68091
Included Lab Sample IDs: 1774319, 1774320, 1774321, 1774322, 1774323

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	99.4	P/P	90 - 110
Ammonia-N	99.4	98.9	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					1.77	
EPA 300.0 Rev. 2.1	Chloride	103	103	103		0.141	
	Sulfate	99.7				1.74	
EPA 350.1 Rev. 2.0	Ammonia-N	99.4	98.0	98.5			0.468
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.5					0.574
EPA 353.2 Rev. 2.0	NO2NO3-N	102	99.1	100			0.870
	NO2NO3-N	102	103	102			0.487
EPA 365.1 Rev. 2.0	Total-P	105	99.3	98.7			0.489
	Total-P	104	99.3	96.8			2.42
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	103	102	103			1.27
SM 2120 B	Color (true)					2.87	
SM 2320 B-97	Total Alkalinity	105				5.00	
	Total Alkalinity	103				0.401	
SM 2540 C-97	TDS					4.48	
SM 4500 F-C-97	Fluoride	96.8	96.0	96.7			0.473
	Fluoride	96.3	95.8	97.2			0.999

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	Precision		
				LCS	SMP	MS
SM 5310 B-00	Organic Carbon	91.4				0.519

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1774314, 1774315, 1774316, 1774317, 1774318
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1774314, 1774315, 1774316, 1774317, 1774318
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1774314, 1774315, 1774316, 1774317, 1774318
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1774319, 1774320, 1774321, 1774322, 1774323
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1774319, 1774320, 1774321, 1774322, 1774323
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1774319, 1774320, 1774321, 1774322, 1774323
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1774319, 1774320, 1774321, 1774322, 1774323
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1774324, 1774325, 1774326, 1774327, 1774328
SM 2120 B / E31780	True Color measured at 450 nm	1774314, 1774315, 1774316, 1774317, 1774318
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1774314, 1774315, 1774316, 1774317, 1774318
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1774314, 1774315, 1774316, 1774317, 1774318
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1774314, 1774315, 1774316, 1774317, 1774318
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1774314, 1774315, 1774316, 1774317, 1774318
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1774319, 1774320, 1774321, 1774322, 1774323

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	02/24/2016			02/24/2016 15:24	Sima Feizi	1774314, 1774315, 1774316, 1774317, 1774318
EPA 300.0 Rev. 2.1	02/24/2016			03/01/2016	Ping Hua	1774314, 1774315, 1774316, 1774317, 1774318
EPA 350.1 Rev. 2.0	02/24/2016			03/08/2016	Diana M. Turner	1774319, 1774320, 1774321, 1774322, 1774323
EPA 351.2 Rev. 2.0	02/24/2016	03/02/2016	Christopher Armour	03/04/2016	Rochelle Y Jackson	1774319, 1774320, 1774321, 1774322, 1774323
EPA 353.2 Rev. 2.0	02/24/2016			03/01/2016	Peter D. Kaus	1774319
	02/24/2016			03/03/2016	Peter D. Kaus	1774320, 1774321, 1774322, 1774323
EPA 365.1 Rev. 2.0	02/24/2016	03/02/2016	Christopher Armour	03/03/2016	Lipi Saha	1774319, 1774320, 1774321, 1774322, 1774323
EPA 365.1 Rev. 2.0 dissolved	02/24/2016			02/24/2016 14:56	Bryan A. Werth	1774324
	02/24/2016			02/24/2016 15:19	Bryan A. Werth	1774325, 1774326
	02/24/2016			02/24/2016 15:20	Bryan A. Werth	1774327
	02/24/2016			02/24/2016 15:21	Bryan A. Werth	1774328
SM 2120 B	02/24/2016			02/24/2016 17:28	Blanca Fach	1774314, 1774315
	02/24/2016			02/24/2016 17:29	Blanca Fach	1774316
	02/24/2016			02/24/2016 17:30	Blanca Fach	1774317
	02/24/2016			02/24/2016 17:31	Blanca Fach	1774318
SM 2320 B-97	02/24/2016			02/27/2016	Dale L. Simmons	1774315, 1774316, 1774317, 1774318
	02/24/2016			03/04/2016	Dale L. Simmons	1774314
SM 2540 C-97	02/24/2016			02/26/2016	Yijie Li	1774314, 1774315, 1774316, 1774317, 1774318
SM 2540 D-97	02/24/2016			02/26/2016	Yijie Li	1774314, 1774315, 1774316, 1774317, 1774318
SM 4500 F-C-97	02/24/2016			02/26/2016	Dale L. Simmons	1774314
	02/24/2016			03/03/2016	Dale L. Simmons	1774315, 1774316, 1774317, 1774318
SM 5310 B-00	02/24/2016			02/27/2016	Sofia Elnemr	1774319, 1774320, 1774321, 1774322, 1774323